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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/645,879	08/22/2003	Mikio Yamazaki	1639.1035	8668
21171	7590	03/25/2005	EXAMINER	
STAAS & HALSEY LLP SUITE 700 1201 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005			DOTE, JANIS L	
			ART UNIT	PAPER NUMBER
			1756	

DATE MAILED: 03/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/645,879

Applicant(s)

YAMAZAKI, MIKIO

Examiner

Janis L. Dote

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 December 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 3,4 and 11-13 is/are allowed.
- 6) ☒ Claim(s) 1,2 and 5-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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1. The examiner acknowledges the amendments to claims 1, 3, and 9, and the addition of claims 11-13 set forth in the amendment filed on Dec. 23, 2004. Claims 1-13 are pending.

2. The objections to the specification set forth in the office action mailed on Aug. 24, 2004, paragraph 1, have been withdrawn in response to the amended paragraphs 0030 and 0077 of the specification filed on Dec. 23, 2004.

The objection to the specification set forth in the office action mailed on Aug. 24, 2004, paragraph 2, has been withdrawn in response to applicant's comments filed on Dec. 23, 2004, page 7, last full paragraph.

The rejection of claims 3 and 4 under 35 U.S.C. 112, second paragraph, set forth in the office action mailed on Aug. 24, 2004, paragraph 5, has been withdrawn in response to the amendment filed on Dec. 23, 2004, to claim 3.

The rejections under 35 U.S.C. 103(a) of claims 1, 5, 7, and 10 over US 5,066,557 (Robinette) combined with US 5,677,096 (Suzuki), as evidenced by applicant's admission that titanium oxide can be used as the fine particles that perform the functions of scattering exposed light and transporting photo-generated charges to the substrate disclosed in paragraph 0030 of the instant specification, and of claims 8 and 9 over

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Robinette combined with Suzuki and the other cited references, set forth in the office action mailed on Aug. 24, 2004, paragraphs 8-10, respectively, have been withdrawn in response to the amendment to claim 1, adding the limitation that the "weight average molecular weight of poly(vinyl acetal) utilized in the organic binder resin is at least  $7.0 \times 10^4$  in a distribution of a polystyrene-converted molecular weight obtained by gel permeation chromatography" (emphasis added). As discussed in paragraph 8, Robinette discloses a charge generation layer comprising "styrene-butadiene dimethylamino ethylmethyl acrylate" resin. Robinette does not teach a "poly(vinyl acetal) utilized" in the binder resin as recited in instant claim 1.

3. The recitation "overlapping range in molecular weight distributions" in claim 3 is defined in the instant specification in paragraphs 0037-0040, when the conditions (1) or (2), as described in paragraphs 0039 and 0040, respectively, are satisfied.

In the response filed on Dec. 23, 2004, applicant stated that the conditions (1) and (2) disclosed in paragraphs 0037-0040 of the instant specification "when two

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molecular weight distributions are defined to be 'overlapping' are believed to be clear."

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1, 5, and 7-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Instant claim 1 is indefinite in the phrase "the weight average molecular weight of poly(vinyl acetal) utilized in the organic binder resin is at least  $7.0 \times 10^4$  in a distribution of a polystyrene-converted molecular weight obtained by gel permeation chromatography" (emphasis added) for lack of antecedent basis in the claim. Claim 1 does not previously recite that the organic binder resin comprises or is a poly(vinyl acetal). It is not clear whether the poly(vinyl acetal) is the organic binder resin or is another component of the charge generation layer.

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Claim 9 is indefinite in the phrase "the charge generation material is selected from the group consisting of phthalocyanine compounds and bisazo compounds, and wherein the charge generation material is selected from the group consisting of phthalocyanine compounds and bisazo compounds or a ratio of amorphous titanylphthalocyanine to the organic binder resin in a coating liquid is adjusted so that a ratio of the weight of the charge generation material to the organic binder resin in the charge generation layer that is coated and dried in the range from 7/3 to 5/5" (emphasis added) because it is not clear what is the charge generation material. It is not clear whether the charge generation material can be a phthalocyanine compound or a bisazo compound, or whether the charge generation material can be a phthalocyanine compound, a bisazo compound, or the weight ratio recited in instant claim 9.

Claim 9 is further indefinite in the phrase "the charge generation material is . . . a ratio of amorphous titanylphthalocyanine to the organic binder resin in a coating liquid is adjusted so that a ratio of the weight of the charge generation material to the organic binder resin in the charge generation layer that is coated and dried in the range from 7/3 to 5/5" for lack of unambiguous antecedent basis in claim 9. Claim 9 does not previously recite that the charge generation

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material is an amorphous titanylphthalocyanine. Moreover, it is not clear how a charge generation material can be a weight ratio of two components.

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 1, 5, and 7-10 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention.

Instant claim 1 recites that "the weight average molecular weight of poly(vinyl acetal) utilized in the organic binder resin is at least  $7.0 \times 10^4$  in a distribution of a polystyrene-converted molecular weight obtained by gel permeation chromatography."

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(1) In the event the organic binder resin is not the poly(vinyl acetal) recited in instant claim 1, the originally filed specification does not provide an adequate written description for the following subject matter recited in instant claim 1:

(1a) The originally filed specification does not provide an adequate written description of said poly(vinyl acetal) "utilized in the organic binder" having the recited weight average molecular weight. The originally filed specification at page 5, lines 3-4, discloses that the organic binder resin in the charge generation layer has a weight average molecular weight of at least  $7.0 \times 10^4$  in a distribution of a polystyrene-converted molecular weight obtained by gel permeation chromatography. The originally filed specification does not disclose that a component present in the organic binder resin, i.e., "poly(vinyl acetal) utilized in the organic binder resin," has the molecular weight recited in instant claim 1.

(1b) The originally filed specification also does not provide an adequate written description of the broad limitation "poly(vinyl acetal) utilized in the organic binder resin." The originally filed specification discloses that the binder resin in the charge generation layer is "substantially composed of poly(vinyl acetal) represented by" the chemical formula (1)



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disclosed at page 5, lines 8-10; or the binder resin is "substantially composed of a mixture of two or more types of the poly(vinyl acetal) [of formula (1)] that have different weight average molecular weights and have an overlapping range in molecular weight distributions." Originally filed specification, page 5, lines 6-14. The limitation "poly(vinyl acetal) utilized in the organic binder resin" recited in instant claim 1 is broader than the disclosed amount of "substantially composed of" because it encompasses organic binder resins that are not "substantially composed" of the particular poly(vinyl acetal) disclosed in the originally filed specification.

(1c) The originally filed specification further does not provide an adequate written description of the term "poly(vinyl acetal)" broadly recited in instant claim 1. As discussed in item (1b) above, the originally filed specification discloses that the binder resin in the charge generation layer is "substantially composed of poly(vinyl acetal) represented by" the chemical formula (1) disclosed at page 5, lines 8-10; or the binder resin is "substantially composed of a mixture of two or more types of the poly(vinyl acetal) [of formula (1)] that have different weight average molecular weights and have an overlapping range in molecular weight distributions." The term "poly(vinyl acetal)" broadly recited in instant claim 1 is

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broader than the disclosed poly(vinyl acetal) because it encompasses poly(vinyl acetal) resins that are not represented by the formula (1) disclosed in the originally filed specification.

(2) In the event the organic binder resin is the poly(vinyl acetal) recited in instant claim 1, the originally filed specification does not provide an adequate written description for the following subject matter recited in instant claim 1:

The originally filed specification does not provide an adequate written description of the term "poly(vinyl acetal)" broadly recited in instant claim 1 for the reasons discussed in item (1c) above, which are incorporated herein by reference.

8. The indicated allowability of claim 9 set forth in the office action mailed on Aug. 24, 2004, is withdrawn in view of the amendment filed on Dec. 23, 2004, to claim 9. Amended claim 9 no longer requires that the charge generation layer comprise an amorphous titanylphthalocyanine as the charge generation material and that the amorphous titanylphthalocyanine be present in the weight ratio of 7/3 to 5/5 of amorphous titanylphthalocyanine to the binder resin. Rather, amended claim 9 recites that the charge generation material is "selected

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from the group consisting of phthalocyanine compounds and bisazo compounds, wherein charge generation material is selected from the group consisting of phthalocyanine compounds and bisazo compounds or a ratio of amorphous titanylphthalocyanine to the organic binder resin . . . " (emphasis added).

9. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

10. Claims 1, 2, 5-7, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent 2002-107972 (JP'972), as evidenced by Grant & Hackh's Chemical Dictionary, page 277 and the CRC Handbook of Chemistry and Physics, 48<sup>th</sup> edition, page B-177; combined with US 4,518,669 (Yashiki), as evidenced by applicant's admission that melamine is a thermosetting resin and that titanium oxide can be used as the fine particles that perform the functions of scattering exposed light and transporting photo-generated charges to the substrate disclosed in paragraph 0030 of the instant specification. See the USPTO English-language translation of JP'972 for cites.

JP'972 discloses an organic electrophotographic photoconductor comprising an aluminum conductive substrate

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having thereon in order, an intermediate layer, an undercoating layer, a charge generation layer, and a charge transport layer.

See the USPTO translation, example 1 in paragraphs 0056-0062 and in Table 1 at page 19. The intermediate layer comprises

electroconductive tin oxide coated titanium oxide particles dispersed in a resol phenol resin. USPTO translation,

paragraphs 0023 and 0056. The undercoating layer comprises a polyamide copolymer. USPTO translation, paragraph 0057.

The charge generation layer comprises a hydroxygallium phthalocyanine as the charge generation material and a

poly(vinyl butyral) resin which has a weight average molecular weight (Mw) of  $3.0 \times 10^5$  and a number average molecular weight

(Mn) of  $5.4 \times 10^4$ . Thus, the ratio of Mw/Mn is 5.56. See the

USPTO translation, paragraph 0058 and Table 1. The weight

average molecular weight is determined by gel permeation

chromatography using polystyrene as the standard. See the USPTO

translation, paragraphs 0035-0036. The poly(vinyl butyral)

resin is represented by the chemical structure disclosed in

paragraph 0015 of the translation. The poly(vinyl butyral)

disclosed by JP'972 is within the binder resin compositional

limitation recited in instant claim 2. The Mw and the ratio of

Mw/Mn are within the Mw and the ratio Mw/Mn ranges recited in

instant claims 1 and 9. The hydroxygallium phthalocyanine meets

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the charge generation material limitation recited in instant claims 7 and 9. Gallium has a specific gravity of 5.904 when a solid and a specific gravity of 6.095 when a liquid. See the CRC Handbook of Chemistry and Physics, 48<sup>th</sup> edition, page B-177.

A heavy metal is defined as a metal having a specific gravity greater than 4. See Grant & Hackh's Chemical Dictionary, page 277. Thus, gallium is a heavy metal. The term "a heavy metal" recited in instant claim 10 encompasses the hydroxygallium core in the JP'972 hydroxygallium phthalocyanine. Accordingly, the JP'972 hydroxygallium phthalocyanine meets the core limitation "a heavy metal" recited in instant claim 10.

JP'972 does not disclose that its intermediate layer comprises a thermosetting resin as recited in the instant claims. However, JP'972 does not limit the composition of the intermediate layer. USPTO translation, paragraph 0023, lines 7-11.

Yashiki discloses an intermediate layer located between an aluminum conductive substrate and an undercoating layer comprising a polyamide resin, where a charge generation layer and a charge transport layer are sequentially coated on top of the undercoating layer. The intermediate layer comprises conductive tin oxide treated titanium oxide particles and titanium oxide particles dispersed in a binder resin comprising

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an acrylic resin and a melamine resin. See example 1, col. 9, lines 25-39. The instant specification in paragraph 0030 discloses that the thermosetting resin includes melamine. Thus, the intermediate layer disclosed by Yashiki meets the undercoating layer compositional limitation recited in instant claim 1. According to Yashiki, the intermediate layer eliminates the defects associated with course faced substrates. Col. 2, lines 30-33. A photoconductor comprising the intermediate layer disclosed by Yashiki is said to provide good quality reproduced images. Col. 2, lines 41-43. The Yashiki undercoating is similar to the undercoating layer disclosed in JP' 972.

Yashiki does not explicitly disclose that tin oxide treated titanium oxide particles and titanium oxide "perform functions of scattering exposure light and transporting photo-generated charges to the substrate," as recited in instant claims 5 and 6. However, Yashiki teaches that the intermediate layer comprising the dispersion of said tin oxide treated titanium oxide particles and titanium oxide particles "has a nature to scatter a light beam at its surface and hence, for instance, can prevent the reflection of a laser beam from the substrate surface and hence the interference of the reflected laser beam." Col. 4, lines 62-68. The instant specification in paragraph 0030 also

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discloses that the titanium oxide particles can be used as the fine particles that perform functions of scattering exposure light and transporting photo-generated charges to the substrate. Thus, it is reasonable to presume that the tin oxide treated titanium oxide particles and titanium oxide particles disclosed by Yashiki perform the functions recited in instant claims 5 and 6. The burden is on applicant to prove otherwise. In re Fitzgerald, 205 USPQ 594 (CCPA 1980).

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Yashiki, to use the Yashiki intermediate layer as the intermediate layer in the photoconductor disclosed by JP'972, because that person would have had a reasonable expectation of successfully obtaining an electrophotographic photoconductor that provides good quality reproduced images as disclosed by Yashiki.

Applicant's arguments filed on Dec. 23, 2004, have been fully considered but they are not persuasive.

Applicant asserts that the combination of the references do not suggest that the "polyvinyl-butyril-resin which has a specific molecular weight distribution, is used for an adhesion-resin of a CGL [charge generation layer] and that the improvement of adhesion between the CGL and the UCL (undercoat layer] is achieved." Applicant asserts that the JP'972

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intermediate layer and undercoating layer, which does not contain a thermosetting resin, are different from the undercoating layer recited in the instant claims. Applicant further asserts that Yashiki teaches away from an undercoat layer having fine particles that perform functions of transporting photo-generated charges to the conductive substrate.

However, the reasons for combining the references do not have to be those of applicant. As discussed in the rejection above, Yashiki provides reason, suggestion, and motivation to use its intermediate layer as the intermediate layer in the photoconductor disclosed by JP'972. Furthermore, instant claim 1 merely recites "an undercoat layer comprising a thermosetting resin." The recitation "undercoat layer" does not distinguish the "intermediate layer" disclosed by JP'972 or the "intermediate layer" disclosed by Yashiki as being a "different layer" as alleged by applicant. Nor does the claim language "photoconductor comprising . . ." in instant claim 1 exclude the undercoating layer comprising a polyamide resin disclosed by JP'972 or the undercoating layer comprising a polyamide resin disclosed by Yashiki. Nor does the claim language in instant claim 1 require that the charge generation layer be adjacent to the undercoat layer.



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Furthermore, instant claims 5 and 6 merely recite that the fine particles "perform the function of transporting photo-generated charges to the substrate." Instant claims 5 and 6 do not recite that the undercoat layer transports photo-generated charges to the substrate. Moreover, Yashiki does not teach away from an undercoat layer comprising particles that perform transporting photo-generated charges to the substrate, as alleged by applicant. First, Yashiki does not explicitly disclose that its polyamide layer prevents photogenerating charges, which are generated when the photoconductor is exposed to light, from transporting from the charge generation layer to the conductive substrate. Second, the polyamide layers disclosed by Yashiki and JP'972 are known in the art as barrier layers. See the USPTO translation of JP'972 paragraph 0024. It is well known in the electrophotographic art that the function of barrier layers is to prevent unwanted charge injection from the conductive substrate side to the charge generation layer. See US 5,312,708 (Terrell), col. 13, line 65, to col. 14, line 1; and US 3,791,826 (Cherry), col. 1, lines 51-52. Cherry also discloses that another function of barrier layers, which include organic barrier layers of polyamide, is to maintain a suitable charge acceptance. Cherry, col. 1, lines 53-54, and col. 2, line 7. According to Cherry, "the exact process by

which a barrier layer functions is not clearly understood . . . it is probable that tunneling of electronic charge permits the plate [i.e., photoconductor] to be discharged when exposed to light." Col. 1, lines 53-60. In other words, the charges that are generated when the photoconductor is exposed to light tunnel through the barrier layer to the conductive substrate. Thus, the Yashiki teaching of a polyamide layer coated over the Yashiki intermediate layer comprising the thermosetting resin and conductive particles does not teach away from an undercoat layer comprising particles that perform the function of transporting photo-generated charges to the substrate, as alleged by applicant.

Accordingly, the rejection of claims 1, 2, 5-7, 9, and 10 over the combined teachings of the prior art stand.

11. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP'972, as evidenced by Grant & Hackh's Chemical Dictionary, page 277 and the CRC Handbook of Chemistry and Physics, 48<sup>th</sup> edition, page B-177; combined with Yashiki, as evidenced by applicant's admission that melamine is a thermosetting resin and that titanium oxide can be used as the fine particles that perform the functions of scattering exposed light and transporting photo-generated charges to the substrate

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disclosed in paragraph 0030 of the instant specification, as applied to claim 1 above, further combined with US 5,302,479 (Daimon), as evidenced by the DERWENT abstract Acc. No. 1992-392116. See the USPTO English-language translation of JP'972 for cites.

JP'972, as evidenced by Grant & Hackh's Chemical Dictionary, page 277 and the CRC Handbook of Chemistry and Physics, 48<sup>th</sup> edition, page B-177, combined with Yashiki, as evidenced by applicant's admission, renders obvious the photoconductor described in paragraph 10 above, which is incorporated herein by reference.

JP'972 does not exemplify a phthalocyanine as recited in instant claim 8. However, JP'972 teaches that the hydroxygallium phthalocyanine can be the hydroxygallium phthalocyanine disclosed in Japanese Patent 05-263007 (JP'007) having strong Bragg angles ( $2\theta \pm 2^\circ$ ) of  $7.5^\circ$ ,  $9.9^\circ$ ,  $12.5^\circ$ ,  $16.3^\circ$ ,  $18.6^\circ$ ,  $25.1^\circ$ , and  $28.3^\circ$  for the characteristic X-ray diffraction of  $\text{CuK}\alpha$ . JP'972 discloses that the hydroxygallium phthalocyanine disclosed in JP'007 has high sensitivity and excellent chargeability and stability. USPTO translation, paragraph 0027, lines 5-8 and 11.

Daimon is the US equivalent of JP'007. See the DERWENT abstract Acc. No. 1992-392116. Daimon discloses the JP'007

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hydroxyl gallium phthalocyanine characterized in JP'972.

Col. 2, line 64, to col. 3, line 1. Daimon teaches that the hydroxygallium phthalocyanine is represented by the formula (I) disclosed at col. 4, lines 34-58, where the benzene rings in the phthalocyanine can be substituted with a halogen. Col. 4, lines 55-56. Daimon teaches that said hydroxyl gallium phthalocyanine has excellent light sensitivity and durability. Col. 2, lines 40-42.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of JP'972 and Daimon, to use the Daimon hydroxygallium phthalocyanine, which comprises a benzene ring substituted with a halogen, exhibiting the particular X-ray diffraction disclosed by Daimon, as the hydroxygallium phthalocyanine charge generating material in the photoconductor rendered obvious over the combined teachings of JP'972, as evidenced by Grant & Hackh's Chemical Dictionary, page 277 and the CRC Handbook of Chemistry and Physics, 48<sup>th</sup> edition, page B-177, and Yashiki, as evidenced by applicants' admission. That person would have had a reasonable expectation of successfully obtaining an electrophotographic photoconductor having improved sensitivity and durability as taught by Daimon.

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12. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP'972, as evidenced by Grant & Hackh's Chemical Dictionary, page 277 and the CRC Handbook of Chemistry and Physics, 48<sup>th</sup> edition, page B-177, combined with Yashiki, as evidenced by applicant's admission that melamine is a thermosetting resin and that titanium oxide can be used as the fine particles that perform the functions of scattering exposed light and transporting photo-generated charges to the substrate disclosed in paragraph 0030 of the instant specification, as applied to claim 1 above, further combined with US 6,180,301 B1 (Mayo). See the USPTO English-language translation of JP'972 for cites.

JP'972, as evidenced by Grant & Hackh's Chemical Dictionary, page 277 and the CRC Handbook of Chemistry and Physics, 48<sup>th</sup> edition, page B-177, combined with Yashiki, as evidenced by applicant's admission, renders obvious the photoconductor described in paragraph 10 above, which is incorporated herein by reference.

JP'972 does not exemplify a phthalocyanine as recited in instant claim 8. However, JP'972 teaches that "[i]f necessary it is possible to mix other phthalocyanine pigments, besides the hydroxygallium phthalocyanine . . . for the charge generating material." USPTO translation, paragraph 0026, lines 1-3.

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Mayo teaches a charge generating material comprising a mixture of hydroxygallium phthalocyanine and tetrafluoro hydroxygallium phthalocyanine represented by the formula disclosed at col. 11, lines 28-50, which comprises four benzene rings substituted with a fluorine atom. Col. 11, lines 52-57, and example X at cols. 18-19. According to Mayo, photoconductor comprising said mixture has "a range of photosensitivities of from about  $100 \text{ V}\cdot\text{cm}^2/\text{erg}$  to about  $300 \text{ V}\cdot\text{cm}^2/\text{erg}$ , while maintaining a desirable degree of dark decay." Col. 11, lines 57-62; and Table 2 at col. 19.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Mayo, to mix the Mayo tetrafluoro hydroxygallium phthalocyanine with the hydroxygallium phthalocyanine used in the charge generating layer of JP'972, as taught by Mayo, and to use the resultant mixture as the charge generating material in the photoconductor rendered obvious over the combined teachings of JP'972, as evidenced by Grant & Hackh's Chemical Dictionary, page 277 and the CRC Handbook of Chemistry and Physics, 48<sup>th</sup> edition, page B-177, and Yashiki, as evidenced by applicants' admission. That person would have had a reasonable expectation of successfully obtaining an electrophotographic photoconductor having a "range of photosensitivities of from about  $100 \text{ V}\cdot\text{cm}^2/\text{erg}$

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to about  $300 \text{ V}\cdot\text{cm}^2/\text{erg}$ , while maintaining a desirable degree of dark decay," as taught by Mayo.

13. Claims 3, 4, and 11-13 are allowable over the prior art of record.

The prior art of record does not disclose or teach a charge generation layer comprising the combination of two or more the of poly(vinyl acetal) resins represented by the formula (1) recited in instant claim 3 that have different weight average molecular weights and an overlapping range in molecular weight distributions as recited in instant independent claim 3. As discussed in paragraph 10 above, JP'972 teaches a charge generation layer comprising a charge generating hydroxygallium phthalocyanine and a poly(vinyl butyral) binder resin that meets the binder resin limitations recited in instant claims 1 and 2. However, JP'972 does not teach that the poly(vinyl butyral) binder resin comprises two resins having different weight average molecular weights and overlapping molecular weight distributions as recited in instant claim 3.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janis L. Dote whose telephone number is (571) 272-1382. The examiner can normally be reached Monday through Friday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Mark Huff, can be reached on (571) 272-1385. The central fax phone number is (703) 872-9306.

Any inquiry of papers not received regarding this communication or earlier communications should be directed to Supervisory Application Examiner Ms. Claudia Sullivan, whose telephone number is (571) 272-1052.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JLD

Mar. 21, 2005

*Janis L. Dote*  
JANIS L. DOTE  
PRIMARY EXAMINER  
GROUP 1500  
(700)